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Validity of the Arabic version of the Iowa-Netherlands Comparison Orientation Measure (INCOM-Ar) among the Lebanese Population

Anna-Marina Nakhl
Lebanese University
Jana Kotaich
Lebanese University
Muhammad Barakat
Caucasus International University
Nasser El Amine
Lebanese American University
Zeinab Karaki
Lebanese University
Rima Hariri
hariri.rima.m@gmail.com
Lebanese University
Pascale Salameh
INSPECT-LB (Institut National de Santé Publique Epidémiologie Clinique et Toxicologie- Liban)

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Abstract

Background

Social comparison, the process of evaluating oneself in reference to others, is a fundamental unconscious tendency. The Iowa-Netherlands Comparison Orientation Measure (INCOM), an 11-item scale validated in multiple languages, is developed to explore this tendency. This study aims to assess the validity and reliability of the Arabic version of INCOM within the Lebanese population.

Materials and Methods

The INCOM was translated from English to Arabic using the forward-backward translation method. A sample of 790 Lebanese adults from all governorates completed the questionnaire, which included socio-demographic characteristics, the validated Arabic versions of the INCOM scale and the Interpersonal Reactivity index (IRI). Test-retest reliability was assessed using the interclass correlation coefficient between the total score of the INCOM in a subsample of participants who re-filled the form after 2 weeks.

Results

The A-INCOM demonstrated acceptable internal consistency (Cronbach's α = 0.807) and strong test–retest reliability (ICC = 0.892). Exploratory factor analysis supported a bidimensional structure—ability and opinion comparison— and confirmatory analysis favored the two-factor model over the unidimensional one. Ability comparison correlated positively with the IRI Fantasy and Personal Distress subscales, whereas opinion comparison showed significant positive correlations with all IRI dimensions (Fantasy, Perspective Taking, Empathic Concern, and Personal Distress) and total empathy scores. Multivariable analyses identified governorate and volunteering experience as predictors of ability comparison, while education level predicted opinion comparison.

Conclusion

The Arabic version of the INCOM demonstrates acceptable psychometric parameters, confirming its validity and reliability for measuring social comparison orientation in the Lebanese population.

Introduction

Social comparison is a process in which individuals compare certain aspects of themselves to others in the aim of self-evaluation [1, 2]. It represents a crucial and universally present element of human psychology. Such comparisons may stem from the desire to learn more about one's social standing, performance, abilities, and ways to behave, feel, or even think [1, 2]. Consequently, it is deeply embedded

in the evolutionary structure of humans, influencing the perception of their overall self-worth. People often associate social comparison with undesirable emotions such as envy and taking pleasure in others' misfortune, making it harder for individuals to acknowledge their involvement in it [1, 2]. Nonetheless, the growing research community emphasizes the significance of social comparison in the social environment, pointing to its deep roots in human evolution[3, 4], as social comparison also carries positive and adaptive functions. Upward comparisons may motivate self-improvement and goal striving, while downward comparisons can enhance emotional coping and protect self-esteem [3, 4]. In many contexts, comparing oneself to others promotes learning, calibration of personal abilities, and better decision-making, underscoring its essential role in social adaptation [3, 4].

The origin of social comparison can be traced back to early human history, when individuals sought to assess their power and standing within social groups. Experts argue that social comparison is phylogenetically primordial and that various species have used similar mechanisms to assess themselves relative to competitors[4]. With the evolution of social structures, the practice of social comparison expanded, enabling individuals to unconsciously enhance their status and reproductive opportunities. Globalization, along with the use of social media, has exponentially increased the prevalence and impact of social comparison. Today, individuals have access to information about others, providing a much broader range of opportunities to engage in social comparison[5].

The concept of social comparison as a foundational means for self-evaluation was pioneered by Festinger in 1954. Festinger stated that individuals naturally have the drive to evaluate themselves in comparison to others, specifically in the absence of external benchmarks. While Festinger's theory mostly focused on opinions and abilities, further research has significantly expanded the scope of social comparison to include domains such as safety, health, achievement, and interpersonal relationships. This research demonstrated that social comparison does not only impact personal reflection, but also broader life outcomes[6, 7],[8].

Despite social comparison being ubiquitous and engaged in by most individuals, it has been shown that its frequency and subjective importance differ between individuals. These differences can be related either to individual or situational factors. Therefore, the construct of Social Comparison Orientation (SCO), introduced by Gibbons and Buunk (1999), refers to the magnitude and frequency with which individuals compare themselves to others[9]. To measure the SCO, Gibbons and Buunk established the Iowa-Netherlands Comparison Orientation Measure (INCOM), an 11-item scale assessing both ability and opinion comparisons. The INCOM scale has demonstrated reliable psychometric properties with internal consistency coefficients ranging from 0.77 to 0.85 in both English and Dutch versions. Individuals with high SCO have been shown to display increased self-consciousness, interpersonal orientation, neuroticism, and lowered self-esteem. These individuals tend to experience stronger emotional reactions and more pronounced outcomes from social comparison (6, 9, 10, 11).

The findings of this measure also suggest that individuals who engage more frequently in social comparison tend to experience chronic self-activation, due to the connection between social comparison

and heightened self-consciousness [6]. In addition, frequent comparers are often more empathetic and demonstrate greater sensitivity to others' emotions and needs, as well as an increased willingness to help those in distress [6]. Importantly, it is necessary to distinguish social comparison from competition; individuals high in SCO often display greater interdependence and conformity, whereas competitive individuals tend to emphasize differentiation and independence [6].

The use of INCOM has gone beyond simply measuring individual differences. Research has shown that it can serve as a meaningful moderator in assessing the effects of social comparison. Several studies have shown a correlation between high SCO and the effects of positive and negative comparisons on individuals' self-evaluation, self-perception, and behavioral choices. For example, in a clinical setting, cancer patients with high SCO showed improved quality of life following exposure to positive coping models. Similarly, another study showed that students with high SCO had their risk perception and behavior influenced by information about others' actions. The results of such studies support the significance of SCO as a moderator of the effects of social comparison across various fields[6],[10],[11].

The INCOM has been validated in a variety of languages and cultural contexts, including English, Spanish, German, Portuguese, Japanese, Turkish, Persian, and Korean. These validations were deemed necessary due to the scale's theoretical importance and strong psychometric properties. Cross-cultural research suggested that individuals may engage in social comparison differently depending on cultural background, prompting refinements or adaptations of the INCOM scale. Moreover, phrasing questions differently in the scale has been found to influence the responses of people. For example, the Spanish validation scale demonstrated that a shortened version of INCOM still provided a reliable single-factor structure while also highlighting important cultural nuance. In contrast, the German scale faced some challenges with reverse-coded items, thus favoring a shortened two-factor scale. Nonetheless, across the different studies, SCO has been associated with demographic variables such as age, gender, and organizational settings. For instance, women in Spain and men in Chile scored high on SCO, and there was a general decreasing trend of SCO with increased age. At the organizational level, an increased SCO was linked with burnout, proactive career behavior, and workplace jealousy. Collectively, these studies further underscore the broad applicability and relevance of the INCOM scale across diverse backgrounds[12].

Despite the extensive research and validation on INCOM across different areas with different cultures, there remains a clear gap in validated tools used for assessing social comparison in Arabic-speaking countries. This is particularly important given the known impact of maladaptive social comparison on mental health, especially anxiety and depression. Validating this scale in Lebanon can be especially significant due to the country's unique psycho-sociocultural dynamics that may shape the outlook and outcome of social comparison [13, 14]. With its complex mix of social and religious identities, history of economic challenges, and strategic geographical location, Lebanon offers a unique environment shaped by both local dynamics and global influences, making it an ideal setting to study social comparison among its people [13–15].

This study aims to address the existing gap in research among the Lebanese population by translating and validating the INCOM scale in Arabic, with local culture consideration. Establishing the reliability and validity of Arabic INCOM will provide an essential tool for promoting cross-cultural studies of social comparison. The latter will aid in identifying the risk of negative psychological outcomes related to maladaptive use of social comparison. A validated Arabic INCOM will facilitate research and clinical assessment development in Lebanon, and potentially the Arab countries, supporting efforts to understand the impact of social comparison on mental health. This work will also contribute to global research and literature on social comparison by providing assessment tools to a previously underrepresented population, paving way for further research, development, and insight into the cultural dimensions of social comparison.

Methods

Study design and participants

This national cross-sectional study was conducted during February 2025 among 790 Lebanese individuals older than 18 years old from diverse residences across Lebanon. The data collection process used a snowball technique by disseminating a Google Form through different social media platforms, including WhatsApp, Facebook, Instagram, LinkedIn, and MEDICA Research Investigation groups, which facilitated broad recruitment across individuals with different demographic, educational, and social profiles. Ensuring such diversity is essential to improve the generalizability, cultural relevance, and psychometric robustness of the instrument. Test-retest reliability was assessed using the interclass correlation coefficient between the total score of the INCOM in a subsample of participants who re-filled the form after 2 weeks.

Development of Arabic INCOM

The translation of the INCOM into the Arabic language was performed according to the five-step procedure of the Beaton et al. guidelines [16], after permission from the authors of the original questionnaire was granted [17]. Two independent translators (one with a degree in translation and another Lebanese, native Arabic speaker) conducted the initial translation from English to Arabic-Lebanese language with clear instructions to focus on conveying the meaning of each item using simple and understandable language tailored to the Lebanese context. These 2 versions were compared, and a unified translated version was created. Following this, two different independent bilingual translators with a degree in translation conducted the back translation into the English language without prior knowledge of the original questionnaire. A comparative analysis between the back-translated version and the original INCOM was undertaken to detect any discrepancies and ensure well-formed interchangeability in the translated items. All authors then reviewed the final Arabic version and resolved inconsistencies, such as translated terms for consciousness that required further explanation in the Arabic language to convey the full meaning intended in the scale. A pilot study was then conducted to

evaluate the comprehensibility and clarity of the translated items. After the pilot feedback, no issues were reported for modification, hence a final Arabic version of the INCOM was adopted for the data collection.

Ethical considerations

The study received approval from the Institutional Review Board (IRB) of Al Sahel General Hospital (Code: 1/2025). Informed consent was obtained electronically from all participants before they started the questionnaire: the first page presented the study objectives and the voluntary and anonymous nature of participation, and only participants who agreed to the consent statement could proceed. All participants were aged 18 years or older. Confidentiality was maintained as all data was collected anonymously and treated with confidentiality, adhering to the principles outlined in the Declaration of Helsinki [18].

Data collection

A standardized questionnaire was developed in Arabic, the native language of Lebanon, requiring approximately 7 minutes for completion. The first page of the questionnaire provided a concise introduction to the survey's context and objectives, and consent statements that the participant had to agree to before filling out the survey. The questionnaire was structured into 4 sections:

1. Socio-demographic characteristics (age, sex, education level, marital status, working status, smoking status, general health questions, and household index).
2. The Arabic version of INCOM is an 11-item validated scale used to assess individuals' tendency to engage in social comparison. Each item is rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), with higher total scores indicating a stronger orientation toward social comparison. The scale encompasses two subdomains: ability comparison and opinion comparison. [19].
3. the Arabic version of the Rosenberg Self-Esteem Scale (RSES), a 12-item unidimensional scale to measure self-esteem [20]. Participants indicate their level of agreement with a set of feelings they might have experienced on a four-point scale from strongly disagree to strongly agree.
4. the validated Arabic version of the Interpersonal Reactivity Index (IRI-Ar), a 28-item scale using a 5-point Likert scale response format that measures empathy both as a multidimensional construct and as an overall unified concept.[21]

Sample size calculation

Sample size guidance suggests that having 5–10 participants per scale item is sufficient to establish evidence of scale validity and reliability [22]. Since the INCOM comprises 11 items, the recommended number of participants would range from 55 to 110. Therefore, opting for the upper limit of this interval,

a minimum of 110 participants was deemed necessary. In our study, a total of 790 participants were included, which exceeds the recommended sample size and provides robust statistical power for scale evaluation (exploratory and confirmatory parts) and further inferential analysis.

Statistical Analysis Plan

Data analysis was conducted on SPSS version 25. Descriptive statistics were conducted to report means and standard deviations (SD) for continuous variables, and frequencies with percentages for categorical ones. The internal consistency of the INCOM was assessed using Cronbach's alpha coefficient, with a coefficient above 0.7 considered as indicative of internal consistency [23]. Test-retest reliability was assessed through the interclass correlation coefficient between the total score of INCOM in a subsample of 30 participants who agreed to fill out the form twice (initially and after 2 to 4 weeks).

Then, the total sample was randomly divided into two groups using the randomization function on SPSS 27.0. In the first random-half sub-group, exploratory factor analysis was conducted using principal components analysis to explore factor structure. Sampling adequacy was assessed by the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity. The number of factors to be retained was determined based on Eigenvalues greater than 1. Factors were retained if they showed cut-off scores of 0.25 and 0.4.

Two Confirmatory factor analyses were then conducted on the second subgroup using JASP. The goodness-of-fit of the models was evaluated using Chi-square ($\chi 2$), degrees of freedom (df), Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), and Normed Fit Index (NFI). All statistical tests were two-sided, and the significance level was at 0.05.

Results

Descriptive statistics

The sociodemographic characteristics of our sample our summarized in Table 1. Our participants' mean age was 26.33 ± 9.3 years, and 57.6% were females. Our participants were distributed among all Lebanese governorates but mostly (32.2%) from Mount Lebanon. The majority (67.8%) were undergraduates/ graduates, single (67.8%), didn't smoke (64.9%), nor drink alcohol (68.2%). Around half of our participants were healthcare workers or students (47.6).

Table 1
Sociodemographic characteristics of the sample population

Sociodemographic characteristics	**Total (n = 790)**
Age	26.33 (9.3)
Gender	
Male	335 (42.4)
Female	455 (57.6)
Governorate	
Beirut	171 (21.6)
Mount Lebanon	254 (32.2)
North/ akkar	221 (28)
Bekaa	33 (4.2)
South/Nabatieh	111 (14.1)
Educational level	
No Formal Education	16 (2.0)
School or equivalent	74 (9.4)
Undergraduate/ Graduate	536 (67.8)
Master/ PhD	164 (20.8)
Social status	
Single	619 (78.4)
Married	156 (19.7)
Divorced	11 (1.4)
Widowed	4 (0.5)
Have children?	
No	666 (84.3)
Awaiting a child	2 (0.3)
Yes	120 (15.2)
Have siblings?	
No	44 (5.6)
Only brothers	187 (23.7)

Sociodemographic characteristics	Total (n = 790)
Only sisters	131 (16.6)
Both	428 (54.2)
Number of brothers	1.57 (1.47)
Number of sisters	1.45 (1.34)
Smoking status	
No	513 (64.9)
Less than once in week	72 (9.1)
1–3 times /week	54 (6.8)
3–6 times /week	29 (3.7)
Daily	122 (15.4)
Alcohol intake	
No	539 (68.2)
Rarely	181 (22.9)
Occasionally	70 (8.9)
Employment status	
Not worker	52 (6.6)
Full Time Student	354 (44.8)
Housewife	5 (0.6)
Part-time employee	247 (31.3)
Full-time employee	41 (5.2)
Self-Employed	88 (11.1)
Retired	3 (0.4)
Health workers?	
No	414 (52.4)
Yes (student)	305 (38.6)
Yes (worker)	71 (9)
Previous leadership position	
No	446 (56.5)

Sociodemographic characteristics	Total (n = 790)
Student Organization	125 (15.8)
Community Service	109 (13.8)
Professional Leadership Position	109 (13.8)
Level of experience in social work (over 5)	2.69 (1.36)
Crowding index	1.12 (0.6)

Psychometric properties of the Arabic INCOM (A-INCOM)

Reliability of the A-INCOM

The internal consistency of the A-INCOM was assessed using Cronbach's alpha and split-half reliability. Results showed an acceptable Cronbach's alpha of 0.807 and a suboptimal split-half reliability, as measured by the Spearman-Brown coefficient, at 0.615. Removal of any of the scale's items did not significantly increase Cronbach's alpha (Table 2).

The intraclass correlation coefficient was used to examine the test-retest reliability over a 2-week period of the A-INCOM. Good reliability was demonstrated with an ICC of 0.892 indicating good stability of the A-INCOM over time.

Table 2
Item-Total Statistics and Internal Consistency Analysis of the A-INCOM

INCOM1	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
	30.706	**46.352**	**.556**	**.388**	**.783**
INCOM2	30.423	44.878	.631	.488	.775
INCOM3	30.658	43.901	.694	.579	.768
INCOM4	30.701	43.999	.668	.560	.770
INCOM5R	30.423	51.491	.180	.321	.821
INCOM6	30.668	45.119	.602	.425	.778
INCOM7	29.753	49.808	.348	.423	.803
INCOM8	29.900	47.200	.500	.546	.789
INCOM9	30.049	47.031	.512	.543	.787
INCOM10	30.019	48.379	.447	.426	.794
INCOM11R	30.484	53.198	.087	.300	.830

Construct validity of the A-INCOM

An exploratory factor analysis (EFA) using principal component analysis with promax rotation method was conducted on a randomly selected half of the sample. The results showed that all variables could be extracted from the questions asked. The extraction yielded two components with eigenvalues > 1, accounting for 58.35% of the total variance (Table 3). Kaiser-Meyer-Olkin (KMO) measure was found to be 0.843, well above the commonly accepted value of 0.60 [24] and Bartlett's test of sphericity was highly significant (χ^2 = 1723.483, df = 55 and p-value < 0.0001) indicating a suitable factor analysis. The two factors represent ability and opinion comparison.

Subsequently, two confirmatory factor analyses (CFAs) were performed on the remaining half of the sample: the first specified a one-factor solution to assess the unidimensionality of the A-INCOM, while the second was intended to confirm the two-factor structure obtained from the EFA.

The single factor CFA showed a χ^2/df = 10.03 (χ^2 = 441.432; df = 44), an RMSEA of 0.151, a CFI of 0.829 and NFI = 0.814. The acceptable values for a good model fit would be χ^2/df < 2, RMSEA < 0.08 and CFI/NFI > 0.9 [25]. The one factor model was therefore a poor fit for the A-INCOM.

The two-factor CFA showed a partially acceptable model fit with χ^2/df = 4.81 (χ^2 = 207.066; df = 43), CFI = 0.929, NFI = 0.913 and RMSEA = 0.098. (Fig. 1)

Table 3
Exploratory Factor Analysis (EFA) of A-INCOM

	Component		
	1: Ability comparison	**2: Opinion comparison**	**Communalities**
4- I often compare how I am doing socially (e.g. social skills, popularity) with other people	.803		.671
3- If I want to find out how well I have done something, I compare what I have done with how others have done.	.787		.673
1- I often compare how my loved ones (boy or girlfriend, family members, etc.) are doing with how others are doing	.733		.555
2-I always pay a lot of attention to how I do things compared with how others do things.	.725		.633
6- I often compare myself with others with respect to what I have accomplished in life	.710		.541
5- I am not the type of person who compares often with others	.610		.483
11- I never consider my situation in life relative to that of other people	0.485		.443
7- I often like to talk with others about mutual opinions and experiences		.757	.587
8- I often try to find out what others think who face similar problems as I face		.737	.642
10- If I want to learn more about something, I try to find out what others think about it		.723	.577
9- I always like to know what others in a similar situation would do		.710	.613
Eigenvalues	4.197	2.222	
Percentage of explained variance	38.154	20.197	
Extraction Method: Principal Component Analysis. Rotation Method: Promax with Kaiser normalization.			

Factors associated with Ability and Opinion Comparison (INCOM subscales)

Significant differences were observed across several participant characteristics. Females reported higher opinion comparison scores than males (14.03 ± 3.57 vs. 13.45 ± 3.67; p = 0.027). Ability comparison varied significantly by governorate (p = 0.003), with the highest scores reported in the Beqaa region (21.15 ± 5.11) and the lowest in the South/Nabatiyeh (18.25 ± 6.61).

Opinion comparison differed significantly by education level (p < 0.001), with higher scores among participants with undergraduate or graduate education (14.03 ± 3.51) compared to those with no formal education (9.93 ± 3.29). Single participants reported significantly higher ability comparison (20.15 ± 5.46; p < 0.001) and opinion comparison scores (14.01 ± 3.47; p = 0.002) compared to married, engaged, or divorced individuals.

A significant association was observed between profession and ability comparison (p = 0.020), with full-time students reporting higher scores (20.08 ± 5.51) and full-time employees reporting lower scores (16.65 ± 5.90). Parental status was significantly associated with both dimensions, with parents reporting lower ability comparison (17.10 ± 5.25) and opinion comparison scores (12.45 ± 4.04) compared to non-parents and those awaiting a child (p < 0.001).

Participants in healthcare-related roles reported higher ability comparison (20.28 ± 5.98 vs. 18.95 ± 5.24; p < 0.001) and opinion comparison scores (14.18 ± 3.48 vs. 13.43 ± 3.71; p = 0.004).

Similarly, leadership experience (14.26 ± 3.37 vs. 13.42 ± 3.76; p = 0.001) and volunteering experience (14.49 ± 3.40 vs. 13.15 ± 3.75; p = 0.013) were also significantly associated with higher opinion comparison.

On the other hand, age was negatively correlated with ability comparison (r = − 0.181; p < 0.001) and opinion comparison (r = − 0.113; p = 0.001) (Supplemental material).

Finally, ability comparison was positively correlated with Fantasy (r = 0.245; p < 0.001), Personal Distress (r = 0.232; p < 0.001), and total IRI scores (r = 0.152; p < 0.001), while opinion comparison was positively correlated with all IRI subscales and the total IRI score (r = 0.410; p < 0.001) (Table 4).

In the multivariable general linear model assessing ability comparison, governorate and volunteering experience remained independently associated with ability comparison scores. Compared to participants from South/Nabatiyeh, those residing in Beirut reported significantly higher ability comparison scores (B = 1.59, p = 0.023). Additionally, participants reporting very low (B = 1.60, p = 0.031), low (B = 1.60, p = 0.030), and high volunteering experience (B = 1.56, p = 0.040) demonstrated significantly higher ability comparison scores compared to those reporting very high volunteering experience (Table 5).

In the multivariable model for opinion comparison, education level emerged as the only significant predictor. Participants with no formal education reported significantly lower opinion comparison scores compared to those holding a master's or PhD degree (B = − 2.94, p = 0.002). No other sociodemographic

or experiential variables remained significantly associated with opinion comparison scores after adjustment (Table 6).

Table 4
Pearson Correlation between ability and opinion comparison and Interpersonal Reactivity Index and its subscales

		Perspective Taking	Fantasy Scale	Empathic Concern	Personal Distress	Interpersonal Reactivity Index
Ability comparison	**Pearson Correlation**	-0.064	**0.245****	0.001	**0.232****	**0.152****
	Sig. (2-tailed)	0.072	< 0.001	0.970	< 0.001	< 0.001
Opinion comparison	**Pearson Correlation**	**0.313****	**0.294****	**0.365****	**0.136****	**0.410****
	Sig. (2-tailed)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

Note: (**) *denotes significance at 0.01 level; a: Spearman correlation as attitude had a non-normal distribution*

Table 5
General Linear Model (GLM) with ability comparison as the dependent variable

Parameter	B	SE	t	Sig.	95% CI		Partial Eta Squared
					LB	UB	
Intercept	17.877	2.231	8.015	0.000	13.498	22.256	0.077
Governorate (Sout/ Nabatieh†)							
Beirut	1.586	0.695	2.283	**0.023**	0.222	2.950	0.007
Mount Lebanon	0.517	0.644	0.803	0.422	-0.748	1.782	0.001
North/ Akkar	0.192	0.709	0.271	0.786	-1.199	1.584	0.000
Beqaa	1.719	1.119	1.536	0.125	-0.478	3.916	0.003
Education (Master/ PhD†)							
No formal education	0.061	1.493	0.041	0.967	-2.870	2.992	0.000
School or equivalent	0.423	0.882	0.479	0.632	-1.309	2.154	0.000
Undergraduate/ graduate	0.256	0.521	0.492	0.623	-0.766	1.279	0.000
Social Status (Divorced†)							
Single	1.941	1.641	1.183	0.237	-1.280	5.163	0.002
Engaged/ Married	0.541	1.506	0.359	0.720	-2.415	3.497	0.000
Are you a parent? (Yes†)							
No	0.246	1.027	0.239	0.811	-1.770	2.262	0.000
Awaiting a child	6.798	3.999	1.700	0.090	-1.051	14.648	0.004
Are you in the healthcare field (Yes†)							
No	-0.777	0.448	-1.735	0.083	-1.657	0.102	0.004
Do you have leadership experience (Yes†)							
No	-0.843	0.474	-1.780	0.076	-1.774	0.087	0.004
Volunteering experience (Very high†)							
Very low	1.596	0.740	2.158	**0.031**	0.144	3.049	0.006
Low	1.598	0.734	2.177	**0.030**	0.157	3.039	0.006

Parameter	B	SE	t	Sig.	95% CI		Partial Eta Squared
					LB	UB	
Moderate	0.465	0.690	0.674	0.501	-0.889	1.818	0.001
High	1.555	0.756	2.056	0.040	0.071	3.040	0.005
Age	-0.045	0.033	-1.354	0.176	-0.111	0.020	0.002

Table 6
General Linear Model (GLM) with opinion comparison as the dependent variable

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval		Partial Eta Squared
					Lower Bound	Upper Bound	
Intercept	12.798	1.394	9.181	0.000	10.062	15.535	0.099
Sex (Female†)							
Male	-0.491	0.262	-1.873	0.061	-1.005	0.023	0.005
Education (Master/ PhD†)							
No formal education	-2.938	0.951	-3.091	**0.002**	-4.805	-1.072	0.012
School or equivalent	-0.308	0.542	-0.568	0.570	-1.371	0.755	0.000
Undergraduate/ graduate	0.288	0.332	0.866	0.387	-0.364	0.940	0.001
Social Status (Divorced†)							
Single	1.073	1.056	1.017	0.310	-0.999	3.145	0.001
Engaged/ Married	0.884	0.965	0.917	0.360	-1.009	2.778	0.001
Are you a parent? (Yes†)							
No	0.971	0.657	1.478	0.140	-0.319	2.260	0.003
Awaiting a child	1.713	2.564	0.668	0.504	-3.319	6.746	0.001
Are you in the healthcare field (Yes†)							
No	-0.282	0.281	-1.002	0.317	-0.834	0.270	0.001
Do you have leadership experience (Yes†)							
No	-0.571	0.301	-1.898	0.058	-1.162	0.020	0.005
Volunteering experience (Very high†)							
Very low	-0.516	0.473	-1.093	0.275	-1.444	0.411	0.002
Low	-0.285	0.469	-0.606	0.545	-1.206	0.637	0.000

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval		Partial Eta Squared
					Lower Bound	Upper Bound	
Moderate	0.035	0.440	0.079	0.937	-0.830	0.899	0.000
High	0.048	0.486	0.099	0.921	-0.905	1.001	0.000
Age	-0.004	0.021	-0.197	0.844	-0.045	0.037	0.000

Discussion

The Arabic INCOM showed good reliability (α = 0.807 after item adjustment, ICC = 0.892) and acceptable construct validity, with two-factor CFA models showing acceptable model fit. The two factors included items related to ability comparison and opinion comparison. Several factors may explain this discrepancy, including cultural differences in social comparison practices, variation in response styles, and challenges associated with reverse-coded items. Social comparison was significantly higher among healthcare workers and was strongly associated with all empathy subdomains and total empathy scores.

The Arabic INCOM scale demonstrated good internal consistency with a Cronbach's alpha of 0.807. This indicates that the items in the scale were consistently measuring the same underlying construct, and the scale was reliable in assessing tendency to engage in social comparison in the studied population. The Cronbach's alpha value of 0.807 for the INCOM is slightly inferior but very close to that of the original scale validation study (Cronbach's alpha of 0.83) [26], and to previous studies that have assessed the original INCOM developed in Spanish language in Spain (Cronbach's alpha of 0.82) and in Chile (Cronbach's alpha of 0.83) [27]. Consistent results were found in a study done in Brazilian context with a Cronbach's alpha of 0.82 [28]. Additionally, Cronbach's alpha remained stable, with no significant improvement observed after the removal of any item. This suggests that all items contribute to the internal consistency of the scale.

Test-retest reliability over 2 weeks was strong, with an ICC of 0.892, proving stability of the measurement over time. In contrast, the original INCOM scale had a moderate stability over time ranging from 0.6 (for 1 year) in the United States and a correlation of 0.72 (for 7.5 months) in the Netherlands. This discrepancy in test reliability could be explained by the fact that it was studied over a duration of two weeks in the Arabic scale, while a longer period was evaluated in the original one. Since the desire to socially compare should increase during periods of heightened uncertainty, and there are many situational factors that may have influence [26], test-retest reliability could be lower when tested over a prolonged period of time.

The performed exploratory factor analysis (EFA) of the Arabic INCOM suggested a two-factor structure. This aligns with findings from the original INCOM scale, where the CFAs indicated that the INCOM

comprises two distinguishable factors that are very highly related. The first scale factor reflected an interest in performance or ability-related comparison, whereas the second factor reflected interest in comparing personal views or opinions. Thus, there was harmony between the Arabic INCOM scale's factor structure and that of the original version.

The results of the study revealed that healthcare workers have higher social comparison tendencies. Medical students and junior doctors are known to compare themselves with others, in terms of prior learning and current performance, as a means of self-assessment validation, and to estimate their own abilities. Similarly, previous research done among medical students in clinical workplace learning showed a high tendency to compare themselves to similarly situated peers in a clinical hierarchy and equally experienced in clinical practice [29].

In addition, a significant association was identified between social comparison and empathy. Empathy is defined as the ability to understand the personal experience of another without bonding with them [30]. Previous studies have shown that social comparison, the empathic system, and the reward system are all supported by various networks [31]. Individuals tend to show greater empathy when they succeed. Yet, when their performance is inferior to that of others, even those with prosocial tendencies display reduced sympathy toward the failures of disliked individuals [31].

Conclusion

Our study is the first in the Arabic region to validate the INCOM scale and examine its associated factors. The Arabic INCOM scale had adequate validity and reliability in the sample of Lebanese adults and could be used as a reference in future studies and clinical practices. However, its construct validity needs further investigation. Findings revealed higher social comparison tendencies among healthcare workers and a significant link between social comparison and empathy. Nonetheless, it is important to acknowledge certain limitations. The sample's vast majority was young single students, which may restrict the generalizability of the findings to the wider Lebanese, Arabic-speaking population. Additionally, the use of an online self-administered survey for data collection introduces potential biases, such as selection and response bias, that could influence the validity of the results. The reliance on convenience sampling further raises concerns regarding sampling bias, which may limit the broader applicability of the study's conclusion. Further studies, including more diverse samples, are essential to establish the greater generalizability of the validity of the scale.

Abbreviations

SCO
Social Comparison Orientation
INCOM
Iowa-Netherlands Comparison Orientation Measure
A-INCOM

Arabic Iowa-Netherlands Comparison Orientation Measure
IRB
Institutional Review Board
RSES
Rosenberg Self-Esteem Scale
SD
Standard Deviation
KMO
Kaiser-Meyer-Olkin
χ^2
Chi-square
df
Degree of Freedom
RMSEA
Root Mean Square Error of Approximation
CFI
Comparative Fit Index
NFI
Normed Fit Index
EFA
Exploratory Factor Analysis
CFA
Confirmatory Factor Analysis
GLM
General Linear Model
ICC
Intraclass Correlation
JASP
Jeffrey's Amazing Statistical Program
SPSS
Statistical Package for the Social Sciences

Declarations

Ethics approval:

This study was approved by the Institutional Review Board (IRB) of Al Sahel General Hospital (Code: 1/2025). The study was conducted in accordance with the ethical principles of the Declaration of Helsinki and its later amendments.

Consent to participate:

Informed consent to participate was obtained from all individual participants included in the study. Consent was obtained electronically on the first page of the online questionnaire, before any data were collected. All participants were aged 18 years or older.

Consent for publication:

Not applicable. This study does not include any individual personal data in any form (including images, videos, or other identifiable information).

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Author Contribution

A.N. Leading Author, Idea Generation, Team management J.K. Manuscript writing, Data analysisM.B. Manuscript writing, Data analysisN.E. Data Collection, Manuscript writingZ.K. Data Collection, Manuscript writingR.H. Data Collection, Editing and CorespondanceP.S. Supervision, Proof reading

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Data Availability

All data supporting the findings of this study are available within the paper and its Supplementary Information.

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Figures

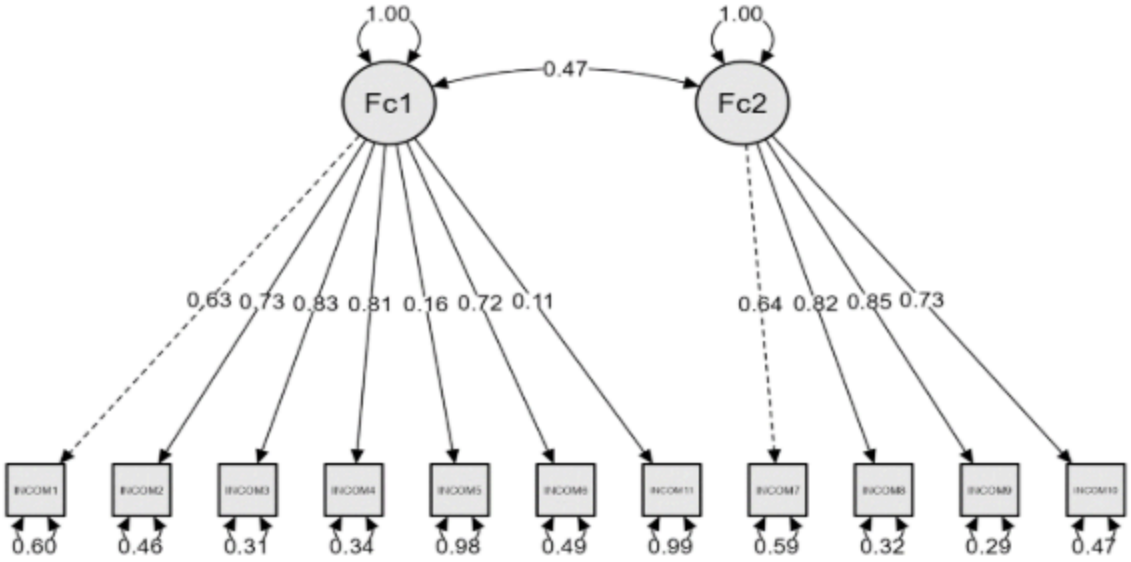


Figure 1

Two-factor model of A-INCOM

Supplementary Files

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